WHAT IS CLAIMED IS:

1. A multi-level system for management of a railway system and its operational components, the railway system comprising:

a first processor associated with a railroad infrastructure level configured to control an operation of a railroad infrastructure operating within the railroad infrastructure level,

a second processor associated with a railroad track network level configured to control an operation of a railroad track network within the railroad track network level, said railroad infrastructure level containing one or more railroad track network levels;

a third processor associated with a train level configured to control an operation of a train operating within the train level, said railroad track network level containing one or more train levels;

a fourth processor associated with a consist level configured to control an operation of a consist of a train within the consist level, said train level containing one or more consist levels; and

a fifth processor associated with a locomotive level configured to control an operation of a locomotive within the locomotive level, said consist level containing one or more locomotive levels;

each processor associated with each level being configured to provide to the processor associated with at least one other level operational parameters that define operational characteristics and data related to the level with which it is associated, and

each processor optimizing the operation within its associated level and to cooperate with a processors associated with at least one other level to optimize an operation of the railway system across the levels of the railway system based on an optimization parameter.

2. The system of claim 1, wherein the optimization parameter is indicative of fuel usage.

3. The system of claim 1 wherein the first processor associated with the railroad infrastructure level receives one or more of:

railroad infrastructure data;

railroad track network data; and

train data; and

controls an operation of a railroad infrastructure within the railroad infrastructure level based at least in part thereon.

4. The system of claim 1 wherein the second processor associated with a railroad track network level receives one or more of:

railroad infrastructure data;

railroad track network data; and

train data; and

controls an operation of a railroad track network within a railroad track network level based at least in part thereon.

5. The system of claim 1 wherein the third processor associated with a train level receives one or more of:

railroad infrastructure data;

railroad track network data;

train data; and

consist data; and

controls an operation of a train within a train level based at least in part thereon.

6. The system of claim 1 wherein the fourth processor associated with a consist level receives one or more of:

train data;

consist data; and

locomotive data; and

controls an operation of a consist within a consist level based at least in part thereon.

7. The system of claim 1 wherein the fifth processor associated with a locomotive level receives one or more of:

consist level data; and

locomotive data; and

controls an operation of a locomotive within the locomotive level based at least in part thereon.

8. The system of claim 1 in which the first microprocessor associated with a railroad infrastructure provides output instructions including one or more of:

infrastructure optimization instructions;

commands to a railroad track network; and

commands to a train.

9. The system of claim 1 in which the second processor associated with a railroad track network provides output instructions including one or more of:

data to a railroad infrastructure;

track network optimization instructions; and

commands to a train.

10. The system of claim 1 in which the third processor associated with a train provides output instructions including one or more of:

data to a railroad infrastructure;

data to a track network;

train optimization instructions; and

commands to a consist.

11. The system of claim 1 in which the fourth processor associated with a consist provides output instructions including one or more of:

data to a train;

consist optimization instructions; and

commands to a locomotive.

12. The system of claim 1 in which the fifth processor associated with a locomotive provides output instructions including one or more of:

data to a consist; and

locomotive optimization instructions.

13. The system of claim 1 wherein each processor when optimizing the operation within its associated level and cooperating with the processors at the another levels to optimize an operation of the railway system across all levels of the railway system based on an optimization parameter includes identifying key operating constraints and data at each level and communicating these constraints and data to adjacent levels to optimize performance at each level based on the data and constraints of adjacent levels.

14. A multi-level system for management of a railway system and its operational components, the railway system comprising:

a first level configured to optimize an operation within the first level, said first level including first level operational parameters defining operational characteristics and data of the first level; and

a second level configured to optimize an operation within the second level, said second level including second level operational parameters defining the operational characteristic and data of the second level;

said first level providing the second level with the first level operational parameters, and the second level providing the first level with the second level operational parameters; and

said optimizing the operation within the first level and said optimizing the operation within the second level each being a function of optimizing a system optimization parameter.

15. The system of claim 14 wherein the system optimization parameter is indicative of fuel usage in the railway system.

16. The system of claim 14 wherein the system optimization parameter is an economic valuation of the time of delivery of cargo carried in the railway system.

17. The system of claim 14 wherein the operational parameters are provided from one level to the other at predetermined intervals.

18. The system of claim 14 wherein the operational parameters are indicative of predetermined changes in conditions.

19. The system of claim 18 wherein the operational parameters are indicative of a rate of change in the conditions.

20. The system of claim 19 wherein the rate of change is with respect to time.

21. The system of claim 19 wherein the rate of change is the change in one condition with respect to another.

22. The system of claim 14 wherein an extent of compliance of the second level with the system optimization parameter is communicated periodically from the second level to the first level for adjusting the first and second level operational parameters based thereon.

23. The system of claim 14 wherein at least one of the operational parameters is an assumed operational parameter.

24. The system of claim 14 wherein at least one of the operational parameters is an actual operating parameter.

25. The system of claim 14 wherein at least one of the operational parameters is based on an anticipated operational condition.

26. The system of claim 22 wherein optimizing the operation within the first level and optimizing the operation within the second level includes identifying key operating constraints and data at one of the first and second level and communicating these constraints and data to another of the first and second level to optimize performance at the another level.

27. A method of optimizing an operation of a multi-level railway system, said railway system having a railroad infrastructure level, a railroad track network level, a train level, a consist level, and a locomotive level, the method comprising:

controlling an operation of a railroad infrastructure within the railroad infrastructure level containing one or more railroad infrastructures;

controlling an operation of a railroad track network within the railroad track network level, said railroad track network level containing one or more railroad track networks;

controlling an operation of a train operating within the train level, said train level containing one or more trains;

controlling an operation of a consist within the consist level, said consist level containing one or more consists;

controlling an operation of a locomotive within the locomotive level, said locomotive level containing one or more locomotives; and

optimizing the operation of the railway system across each of the controlling operations based on an optimization parameter.

28. The method of claim 27 wherein the system optimization parameter is indicative of fuel usuage.

29. The method of claim 27 wherein the step of controlling an operation of a railroad infrastructure within the railroad infrastructure level includes utilizing one or more of :

railroad infrastructure data;

railroad track network data; and

train data;

to control an operation of a railroad infrastructure within the railroad infrastructure level based at least in part thereon.

30. The method of claim 27 wherein the step of controlling an operation of a railroad track network within the railroad track network level includes utilizing one or more of:

railroad infrastructure data;

railroad track network data; and

train data; and

to control an operation of a railroad within a railroad track network level based at least in part thereon.

31. The method of claim 27 wherein the step of controlling an operation of a train operating within the train level includes utilizing one or more of:

railroad infrastructure data;

railroad track network data;

train data; and

consist data;

to control an operation of a train within a train level based at least in part thereon.

32. The method of claim 27 wherein the step of controlling an operation of a consist operating within the consist level includes utilizing one or more of:

train data;

consist data; and

locomotive data; and

to control an operation of a consist within a consist level based at least in part thereon.

33. The method of claim 27 wherein the step of controlling an operation of a locomotive within the locomotive level includes utilizing one or more of:

consist level data; and

locomotive data; and

to control an operation of a locomotive within the locomotive level based at least in part thereon.

34. The method of claim 27 wherein the step of controlling an operation of a railroad infrastructure within the railroad infrastructure level includes providing output instructions including one or more of:

railroad infrastructure optimization instructions;

commands to a railroad track network; and

commands to a train.

35. The method of claim 27 wherein the step of controlling an operation of a railroad track network within the railroad track network level includes providing output instructions including one or more of:

data to a railroad infrastructure;

track network optimization instructions; and

commands to a train.

36. The method of claim 27 wherein the step of controlling an operation of a train operating within the train level includes providing output instructions including one or more of:

data to a railroad infrastructure;

data to a track network;

train optimization instructions; and

commands to a consist.

37. The method of claim 27 wherein the step of controlling an operation of a consist within the consist level includes providing output instructions including one or more of:

data to a train;

consist optimization instructions; and

commands to a locomotive.

38. The method of claim 27 wherein the step of controlling an operation of a locomotive within the locomotive level includes providing output instructions including one or more of:

data to a consist; and

locomotive optimization instructions.

39. The method of claim 27 wherein the step of optimizing the operation of the railway system across each of the controlling operations based on an optimization parameter includes identifying key operating constraints and data at each level and communicating these constraints and data to adjacent levels to optimize performance at each level based on the data and constraints of adjacent levels.

40. A method for optimizing an operation of a railway system, said railway system having a first level and a second level, the method comprising:

communicating from the first level to the second level a first level operational parameter that defines an operational characteristic of the first level;

communicating from the second level to the first level a second level operational parameter that defines an operational characteristic of the second level;

optimizing a system operation across a combination of the first level and the second level based on a system optimization parameter;

optimizing an operation within the first level based on a first level optimization parameter and based in part on the system optimization parameter; and

optimizing an operation within the second level based on a second level optimization parameter and based in part on the system optimization parameter.

41. The method of claim 40 wherein the first level optimization parameter, the second level optimization parameter and the system optimization parameter are a common optimization parameter.

42. The method of claim 41 wherein the common optimization parameter is indicative of fuel usage.

43. The method of claim 40 wherein the operational parameters are provided from one level to the other at predetermined intervals.

44. The method of claim 40 wherein the operational parameters are indicative of predetermined changes in conditions.

45. The method of claim 40 wherein an extent of compliance of the second level with the second level optimization parameter is communicated periodically from the second level to the first level for adjusting the first and second level operational parameters based thereon.

46. The method of claim 40 wherein at least one of the operational parameters is an assumed operational parameter.

47. The method of claim 40 wherein at least one of the operational parameters is an actual operational parameter.

48. The method of claim 40 wherein at least one of the operational parameters is based on an anticipated operational condition.

49. The method of claim 40 wherein the step of optimizing a system operation across a combination of the first level and the second level based on a system optimization parameter includes identifying key operating constraints and data at one of the first and second level and communicating these constraints and data to another of the first and second level to optimize performance at the another level.

50. A multi-level system for management of a railway system and its operational components, the railway system comprising:

a first level including first level operational parameters defining operational characteristics and data of the first level; and

a second level including second level operational parameters configured to optimize an operation within the second level and wherein the second level

operational parameters are indicative of changes in operational characteristics and data of the second level ; and

said second level providing the first level with optimized second level operational parameters.

51. The system of claim 50 wherein said optimizing the operation within the second level is a function of optimizing a railway system optimization parameter.

52. The system of claim 51 wherein the system optimization parameter is indicative of a change in fuel usage in the railway system.

53. The system of claim 51 wherein the system optimization parameter is a change in an economic valuation of the time of delivery of cargo carried in the railway system.

54. The system of claim 50 wherein the second level operational parameters are provided from the second level to the first at predetermined intervals.

55. The system of claim 50 wherein the second level is a portion of the first level.

56. The system of claim 51 wherein the system operational parameter is indicative of a rate of change in second level operational parameters.

57. The system of claim 56 wherein the rate of change is with respect to time.

58. The system of claim 56 wherein the rate of change is the change in one condition with respect to another.

59. The system of claim 50 wherein the second level operational parameters are assumed operational parameters.

60. The system of claim 50 wherein the second level operational parameters are actual operating parameters.

61. The system of claim 50 wherein the second level operational parameters are based on an anticipated operational condition.

62. The system of claim 50 wherein the first level monitors whether or not the optimized second level operation is within predetermined limits.

63. A method for management of a railway system, said railway system having a first level and a second level, the method comprising:

determining at least one operational parameter in the first level wherein the at least one operational parameter includes at least one of a first level operational characteristic and data of the first level; and

optimizing at least one operational parameter in the second level wherein the at least one second level operational parameter is indicative of changes in at least one of a second level operational characteristic and data; and

said second level providing the first level with the at least one optimized second level operational parameter.

64. The method of claim 63 wherein the step of optimizing the operation within the second level is a function of optimizing a railway system optimization parameter.

65. The method of claim 64 wherein the system optimization parameter is indicative of a change in fuel usage in the railway system.

66. The method of claim 64 wherein the system optimization parameter is a change in an economic valuation of the time of delivery of cargo carried in the railway system.

67. The method of claim 63 wherein the second level optimized operational parameters are provided from the second level to the first at predetermined intervals.

68. The method of claim 63 wherein the second level is a portion of the first level.

69. The method of claim 64 wherein the optimized operational parameter is indicative of a rate of change in second level operational parameters.

70. The method of claim 69 wherein the rate of change is with respect to time.

71. The method of claim 69 wherein the rate of change is the change in one condition with respect to another.

72. The method of claim 63 wherein the second level operational parameters are assumed operational parameters.

73. The method of claim 63 wherein the second level operational parameters are actual operating parameters.

74. The method of claim 63 wherein the second level operational parameters are based on an anticipated operational condition.

75. The method of claim 74 wherein the first level monitors whether or not the optimized second level operation is within predetermined limits.